volume on the "Philosophy of Theism." But his new position in an institution devoted largely to the teaching of science led him to throw himself more fully into the study of physics. In 1861 he published, in the *Philosophical Magazine*, his first contribution to scientific literature—a paper on an electrical experiment of Ampère's.

About that time the Geological Society of Glasgow was founded, and became the centre of an active company of geologists who specially took up the study of the traces of the Glacial period, so striking and abundant in the west of Scotland. Croll was drawn into the prevalent enthusiasm, and soon with characteristic ardour and acumen began an investigation of some of the physical difficulties which had arisen in the course of geological inquiry. In 1864 he published his remarkable essay, "On the Physical Cause of the Change of Climate during the Glacial Epoch." This paper speedily attracted the notice of men of science. In it the author endeavoured to find a true cause for the extension of snow and ice during the Ice Age far beyond their present limits. For this purpose he invoked the aid of astronomical and terrestrial physics, and he provided an explanation which captivated geologists by its simplicity as well as by the wide range of phenomena which it helped to elucidate.

It was this paper which laid the foundation of his scientific reputation. It was likewise the means of opening up for him a new and more congenial employment, for it led to his being selected by the present Director-General of the Geological Survey to take charge of the maps and correspondence of the Survey in Edinburgh. He was appointed to this office in 1867, and found himself able to prosecute with more vigour than ever the researches in physical geology which had now so great a charm for him. The question of the origin of climate led him into a far wider field of investigation than he had at first contemplated. It brought him face to face with many theoretical problems which geologists had been unable to solve. These he attacked with characteristic energy. He enforced his arguments with a single eye to the discovery and establishment of truth, and exposed without reserve views which seemed to him erroneous. With no intention of rousing controversy, he soon found himself in collision with other writers who disputed his arguments. One of the most interesting and vigorous of these disputations was with the late Dr. W. B. Carpenter, regarding the theory of Oceanic Circulation. Croll maintained with great force and with general approbation the position for which he contended, that the prime motors in the circulation of the ocean were the winds. After publishing many papers on this and cognate subjects, he collected, condensed, and partly re-wrote these, adding fresh materials to them, and issuing the whole as his well-known work on "Climate and Time in their Geological Relations," which appeared in 1875. Though much division of opinion was aroused as to the real value of some of his views in relation to the establishment of sound geological theory, there was a general recognition of the originality and acuteness of his mode of dealing with accepted facts and principles, and of the value of his writings as stimulating and directing inquiry. He was accordingly elected a Fellow of the Royal Society in 1876, and the University of St. Andrews conferred on him the degree of LL.D.

By degrees, however, Dr. Croll's health began to fail. He suffered so intensely from pains in the head that he was compelled, in 1881, to resign his appointment in the Geological Survey, and retire on the miserably small pension to which, by the rigid rules of the Civil Service, his length of service only entitled him. By exercising the greatest care he was still able at intervals to resume his studies in geological physics, and to publish occasional papers, partly in reply to his critics, who were now increasing in number and pertinacity. In 1885 he published a smaller volume embracing some of these papers, and much new material under the title of "Discussions in Climate and Cosmology."

Dr. Croll's investigations into the geological history of terrestrial climate had led him to consider the question of the origin of the sun's heat, and thence to reflect on the probable condition and development of nebulæ and stars. The later chapters of the volume just mentioned were devoted to these subjects, which he would fain have discussed more at length, had not the increasing failure of his bodily powers warned him that, if he wished still to return to that philosophy which was his first love, he must husband his remaining strength. Nevertheless, the attraction of these astronomical problems proved insuperable. He continued to work at them, gradually enlarging the scope of the investigation until it embraced not the earth and the sun merely, but the origin and development of the whole material universe. At last he followed his usual method, gathered together his various contributions to the subject, trimmed, enlarged, and modified them, and published them in a separate volume, entitled "Stellar Evolution and its Relation to Geological Time."

The publication of that work marks the close of his labours in more definitely scientific inquiry. He was now free, with such remaining strength as he could command, to re-enter the field of philosophical speculation in which he had spent his earliest years of mental exertion, and which for nearly thirty years, through all the engrossing attractions of geological inquiry, had never lost its fascination for him. Accordingly he betook himself once more to the study of such subjects as Force, Matter, Causation, Determinism, Evolution, and proceeded to apply the facts and principles with which he had in the interval been dealing so actively to the problems in philosophy that had aroused his thoughts in the early years of his life. In spite of his increasing infirmity, he persevered in committing to writing the ideas which he had now matured, and this year he sent to press his last work, published only a few weeks ago, "The Philosophical Basis of Evolution."

Of all recent writers who have contributed so much to current scientific literature, probably no one was personally so little known as Dr. Croll. His retiring nature kept him for the most part in the privacy of his own home. But he endeared himself to those who were privileged with his friendship by his gentleness and courtesy, his readiness to help, and the quiet enthusiasm with which he would talk about the topics which absorbed his thoughts. After quitting the Geological Survey of Scotland he tried residence at different places in hopes of finding one where his failing bodily health would least impede the powers of his mind, which he retained with singular freshness up to the close. He settled at last in the town of Perth, where he spent the few remaining years of his life. Struggling on in spite of several ominous warnings, he finished his last book just before the final stroke which carried him off on Monday, the 15th inst.

A. G.

NOTES.

THE President of the Board of Trade has appointed a Committee, to consider whether any, and if so what, steps should be taken for the provision of electrical standards. The following are the members of the Committee:—Lord Rayleigh and Sir William Thomson (representing the Royal Society), Prof. G. Carey Foster and Mr. R. T. Glazebrook (representing the British Association for the Advancement of Science), Dr. John Hopkinson and Prof. W. E. Ayrton (representing the Institution of Electrical Engineers), Mr. E. Graves and Mr. W. H. Preece (representing the General Post Office), Mr. Courtenay Boyle and Major P. Cardew, R.E. (representing the Board of Trade).

The first meeting of the Committee will be held at the Board of Trade on Thursday, January 15. Sir Thomas Blomefield, of the Board of Trade, will act as secretary to the Committee.

THERE ought to be no doubt as to the response to the appeal which has been addressed to Lord Salisbury with respect to Egyptian monuments. As everyone knows, they are among the most interesting monuments in the world, and it is scandalous that they should be exposed to wanton injury. The signatures to the memorial include many eminent names, and we may hope that a suitable inspector will speedily be appointed.

THE Medical Faculty of University College, Dundee, St. Andrews University, in conjunction with the Royal Infirmary of that city, have appointed Prof. Percy Frankland and Dr. Stalker as delegates to visit Berlin in order to study Dr. Koch's new method for the treatment of tuberculosis.

THE committee appointed by the Royal Horticultural Society to consider the best way of doing honour to the memory of the late Mr. Shirley Hibberd met on December 19. They unanimously decided that a portrait of Mr. Hibberd should be secured, and placed in the hands of the trustees of the Lindley Library, on behalf of the Royal Horticultural Society. Any surplus that may remain after the payment of expenses connected with the preparation of the portrait is to be invested for the benefit of Mr. Hibberd's orphan daughter. Dr. Masters is chairman of the committee appointed to carry out the scheme.

THE Lord President of the Council has appointed Dr. C. Le Neve Foster, Inspector of Mines under the Home Office, Professor of Mining in the Royal College of Science, London.

THE Board of Agriculture has approved of the scheme for establishing a Chair of Agriculture at the Yorkshire College, and it has been decided that a Professor shall be appointed at a salary of £300, with emoluments in addition.

IN an interesting pamphlet on agricultural education, Mr. P. McConnell, Lecturer on Agricultural Science at Balliol College, Oxford, refers to the supposed want of teachers competent to teach scientific farming. In his own experience in the matter—and it has not been little—he has found that there is no such want. On the contrary, he says, the great want is the want of students to be taught by such teachers as we have. He contends that agricultural science can be taught at any College where there is already a science curriculum, and that, in fact, "it is only there that we can hope to have the matter developed on a system cheap enough to have it brought within the reach of ordinary farmers."

THE following are the probable arrangements for scientific lectures at the Friday evening meetings at the Royal Institution before Easter 1891:—January 23, Lord Rayleigh, F.R.S., some applications of photography; January 30, Lord Justice Fry, British mosses; February 6, Prof. J. W. Judd, F.R.S., the rejuvenescence of crystals; February 13, Prof. A. Schüster, F.R.S., some results of recent eclipse expeditions; February 20, Edward Emanuel Klein, F.R.S., infectious diseases, their nature, cause, and mode of spread; March 6, Prof. Dr. J. A. Fleming, electro-magnetic repulsion; March 20, Prof. W. E. Ayrton, F.R.S., electric meters, motors, and money matters.

PROF. DEWAR will deliver at the Royal Institution a course of six lectures (adapted to a juvenile auditory) on frost and fire, on the following days, at three o'clock:—Saturday, December 27, Tuesday, December 30, Thursday, January 1, Saturday, January 3, Tuesday, January 6, Thursday, January 8.

MESSRS. NEWTON AND CO. are making for the Royal Institution a new electric lantern, which will be first used in Prof. Dewar's Christmas lectures. The arc light is fixed on an adjusting table, and the body of the lantern revolves so as to bring any one of the fronts opposite the fixed light.

MR. C. CALLAWAY, D.Sc. (Lond.), has been directed by the Shropshire County Council to inquire into the needs of the county with regard to scientific instruction, and to present to the Technical Education Committee of the Council a report on the subject.

IN the *Kew Bulletin* for December there is a letter from Mr. G. T. Carter, C.M.G., on the attempts which have been made to develop the agricultural industries at the Gambia. It affords, as the *Bulletin* observes, striking evidence of the almost insuperable physical difficulties which stand in the way of the permanent success of such efforts. The *Bulletin* notes that by the West African agreement between Great Britain and France of August 10, 1887, a frontier line between the English and French possessions was established. In accordance with its provisions a Special Commission of Delimitation was appointed to trace upon the spot the line of demarcation between the English and French territory. The partition of tropical Africa amongst European nations has made it more than ever a matter of importance to procure materials for, at any rate, a rough survey of its botanical resources. It was desirable to use the opportunity presented by the Gambia Delimitation Commission for the purpose. The Colonial Office was, however, unable to find the funds for attaching a botanist to the staff. But they were willing to allow a medical officer to be selected who would do what was possible in the way of botanical exploration. The appointment was accepted by Mr. J. Brown-Lester, M.B., C.M., of the University of Edinburgh. He was supplied with the necessary botanical outfit from Kew, and left Liverpool with the expedition in the s.s. *Congo* on November 15.

IN addition to the section on cultural industries at the Gambia, the *Kew Bulletin* for December contains much valuable information on the production of prunes in the south of France, the cultivation of perfumery plants in the colonies, banana disease in Fiji, and fibre productions in the Caicos.

WE are glad to see that the City Commission of Sewers are devoting serious attention to the smoke nuisance. At a recent meeting the Sanitary Committee brought up a report relating to frequent complaints on the subject in the City. They stated that for years past Bills had been introduced into Parliament giving local authorities greater powers to deal with such cases, but none of these measures had become law. They recommended that in the next suitable instance a prosecution should be directed against the offenders. Dr. Sedgwick Saunders, medical officer of health, said he had seen the experiments on the Embankment which were being conducted by Mr. Elliott, of Newbury, and the results were eminently satisfactory, especially so far as they related to smoke from furnaces and shafts. They were not so satisfactory in regard to domestic fires. The report was carried, and the Sanitary Committee was directed to investigate and consider the best means of abating the smoke nuisance, and to report thereon to the Commission.

ACCORDING to a telegram from San Francisco, there has recently been an eruption of the volcano at Macao.

THE Report of the Meteorological Council for the year ending March 31, 1890, shows that the work included under the three departments—ocean meteorology, weather telegraphy, and meteorology of the British Isles—is actively carried on. Owing to the want of information in the Pacific, which was felt on the occasion of the Samoa cyclone in March 1889, the Council have decided to establish stations on some of the islands there, with the view of obtaining further observations. The information received by telegraph as to the state of the weather on the British coasts is now conspicuously displayed outside the office twice daily for the use of the public. Among the various reports issued, the Weekly Weather Report merits special mention, as it supplies a very complete and instructive view of the weather changes day by day over the greater part of Europe. Among the various experiments which have been carried out may be mentioned those for determining the pressure of wind on plates of various sizes and inclined at different angles. These experiments have been made with great skill by Mr. W. H. Dines, and the results have been partially published. The determination of solar radiation is a matter upon which considerable uncertainty exists, as no two instruments can be depended upon for giving similar results under similar circumstances. Experiments with two sets of Violle's actinometer apparatus, consisting of *boules conjuguées*, or two hollow copper spheres, one coated with lamp-black and the other gilt, surrounding the bulbs of two thermometers precisely similar in all respects, have been under trial at Kew Observatory, with the view of determining whether their relative values are constant. The result of the experiment is not yet published. The Report tates that there are about 11,000 volumes and pamphlets in the library, containing meteorological data from all parts of the world. The books and other documents are accessible to scientific men for reference at the Meteorological Office; and to facilitate inquiry, reference catalogues are prepared both under authors and subjects.

ONE of the decisions of the last Congress of Russian Naturalists was to the effect that a *Meteorological Review* should be published in Russian, under the direction of the Academy of Sciences. The first volume has been issued, and contains several valuable papers, namely:—On the comparison of the normal barometers of the West European Observatories, by A. Shenrock; on the average temperatures which can be deduced from observations of the maximum and minimum thermometers, by E. Leist; on magnetic observations in Caucasia, by E. Assafrey; and on the Lena, by E. Stelling; on the thunderstorms in Russia in 1886, by E. Berg (9544 observations at 549 different places having been taken into consideration); and on the accumulations of snow on Russian railways, by B. Sreznevski.

THE Board of Editors at the Columbia College, New York, have decided to publish in January the first number of a monthly review, which will be devoted to "the scientific study and discussion of education." It will be known as the *Educational Review*, and will include within its scope education of every grade, higher, secondary, and primary. Each number will contain signed articles on topics of current interest, critical notes and discussions on educational subjects, "an account of important movements in educational thought throughout the world, and results of contemporary psychological research so far as the same have an educational significance."

AN important work on Russian ethnography is being published by A. Pypin. The first volume contains the history of ethnographical research in Russia, and deals with the ethnography of the great Russian stem.

STUDENTS of ethnography will be sorry to hear that Adrian Jacobsen, who has done so much good service by the ethnographical collections he has brought together, finds his scientific labours so unprofitable from a material point of view that he is compelled to abandon them. The attention of Dr. Bastian was attracted to Jacobsen by a most valuable collection he had formed in Greenland, Lapland, Labrador, and elsewhere in 1876–80. The Ethnological Committee founded by Dr. Bastian commissioned Jacobsen to collect objects for the Berlin "Museum für Völkerkunde"; and from 1881 to 1883 he devoted himself to the accomplishment of his task, bringing back to Berlin from the north-western regions of America no fewer than 8000 specimens. In the same service he travelled in 1884 and 1885 among the peoples of Eastern Russia and in many parts of Asia, returning with 3000 objects of great interest; and in the course of a third journey, in 1887 and 1888, he secured 5000 specimens in Singapore, Java, Celebes, and other regions. There are about 90,000 objects in the Berlin Museum, and more than one-sixth of them have been obtained by this skilful and enthusiastic collector, whose devotion to his chosen mission has often placed his life in danger. *Globus*, by which these facts are recorded, finds it hard to believe that "for such a man Germany has no further work and no further gratitude."

La Nature records an interesting archæological discovery which has lately been made near Apt, in Vaucluse, in the valley of the Caulon. M. Rousset, a retired inspector of forests, while superintending the digging of a ditch, was lucky enough to find, on a bed of pebbles, at a depth of 2·50 metres, the remains of what seems to have been a prehistoric workshop. The flint implements had such sharp edges, and were generally in so excellent a state of preservation, that they had evidently never been disturbed from the time when they had been chipped into shape. Among the objects were three nuclei, and students who have been examining them have succeeded in reuniting with each nucleus the fragments broken from it. Thus it is possible to note exactly the procedure of the prehistoric workmen.

M. EDOUARD MARBEAU contributes to the current number of the *Revue Française de l'Étranger et des Colonies* an instructive paper on what he calls "the depopulation of France." From Prof. Léon Le Fort he quotes the following comparison between France and other European countries. For every group of 1000 inhabitants there are born in Hungary 42 children; in Germany, 39; in England, 35; in France, 25. In 1778 the number in France was 38·4. At the present rate of increase, the population would be doubled in Saxony in 45 years; in England in 52 years; in Prussia, in 54 years; in France, in 198 years. If the period of 1886–89 were taken, the time for the doubling of the French population would be 349 years. The slow rate of increase excites much anxiety among thoughtful Frenchmen. It compels them, as M. Marbeau says, to regard "the foreign invasion" as a benefit. At the last census, there were in France 1,137,037 foreigners, three times as many as were to be found in England and Germany combined. These immigrants come chiefly from Belgium, Germany, Italy, and Spain. Recent inquiries show that only 408,000 persons of French birth are living out of France. Of these, 50,000 are in Switzerland; 26,000 in England; 17,000 in Spain; 10,000 in Italy; 55,000 in Belgium; 100,000 in the United States; 60,000 in La Plata.

THE eighteenth fasciculus of M. Fabre's "Traité Encyclopédique de Photographie" (Gauthier-Villars) gives a very useful and interesting account of the methods employed in astronomical photography of every description, and the decisions of the International Star-charting Congress.

DR. G. B. LONGSTAFF'S "Studies in Statistics, Social, Political, and Medical," will be issued by Mr. Edward Stanford on January 12.

THE following science lectures will be given at the Royal Victoria Hall during January:—January 6, the moon, by Dr. Fleming; January 13, glaciers, by Prof. A. H. Green; January 20, our bodies, by Dr. P. H. Carpenter; January 27, all about spectacles, by Dr. Collins.

AT a recent meeting of the Asiatic Society of Japan, held at Yokohama, Admiral Belknap, of the United States Navy, read a paper on the depths of the Pacific Ocean. Admiral Belknap was in Japan in 1874, in command of the U.S.S. *Tuscarora*, engaged in surveying the proposed route for a Pacific submarine cable. The greatest depth found on the voyage was 3287 fathoms, and H.M.S. *Challenger*, then on her exploring voyage, had not discovered anything in the Pacific of as great a depth. But upon leaving Yokohama the *Tuscarora* made very deep soundings. Only 100 miles from the coast 3427 fathoms were found, and a little further on 4643 fathoms went out without bottom being touched. Still keeping on the great circle track a number of soundings of over 4000 fathoms were made, the deepest being 4655. After re-coaling at Hakodate a fresh departure was made, and the Kuriles were skirted, and here again very deep water was found, except in one place, where there is a ridge of land on which there was only 1777 fathoms, whilst there was 3754 on the western side of it, and 4037 on the eastern side, only eighty miles from land. Admiral Belknap observed that there is, therefore, evidently a deep submarine valley running parallel with the coast of Japan, and some 250 miles in width. Whether the Kuro Siwo, or Japan current, corresponding in a sense to the Gulf Stream, has anything to do with this is a matter for surmise. Since the *Tuscarora* first showed us these great depths others have been discovered. The *Challenger* after leaving Japan found 3750 fathoms 200 miles east of Cape King, and nearly the same depth another 200 miles farther, after which the water shoaled. She also got 4475 fathoms only 150 miles from Guam in the Caroline Islands. The U.S.S. *Albatross* found 3820 fathoms off the coast of the Aleutians, and the U.S. Coast Survey steamer *Blake* got 4561 fathoms 70 miles north of Porto Rico, whilst H.M.S. *Egeria*, surveying in the South Pacific, has succeeded in getting depths of 4428, 4295, and 4530 fathoms. Subsequent researches have proved that the deepest portions of both the Atlantic and Pacific Oceans are close to their western shores. The Admiral then gave some description of the apparatus employed, and after paying tribute to the English and American Navies for their researches, he concluded a most interesting lecture by suggesting that the Japanese Naval Service should take up the work, more particularly on their own coasts and along the course of the Kuro Siwo.

THE additions to the Zoological Society's Gardens during the past week include a Wild Cat (*Felis catus* ♂) from Scotland, presented by Mr. Osgood H. Mackenzie; an African Cat (*Viverra civetta* ♀) from West Africa, presented by Mr. John J. Pitcairn, M.R.C.S., F.Z.S.; two Weka Rails (*Ocydromus australis*) from New Zealand, presented by Mr. Edward T. Dixon; a Common Tequexin (*Tupinambis tequexin*) from Rio de Janeiro, presented by Mr. Edward Sloane; a Himalayan Bear (*Ursus tibetanus*) from Tibet, deposited; a Molucca Deer (*Cervus moluccensis* ♀), born in the Gardens.

OUR ASTRONOMICAL COLUMN.

STARS WITH PECULIAR SPECTRA.—A communication from Prof. E. C. Pickering to *Astronomische Nachrichten*, No. 3008, announces the discovery of the following stars having peculiar spectra, and of some new variables in the constellations Triangulum and Hydra:—

Designation of star.	R.A. 1900.	Decl. 1900.	Mag.	Date of photograph.	Description of spectrum.
	h. m.	° ′			
D.M. + 33°·470	2 31·0	+33 51	9·2	1890 Oct. 13	III. Type. Bright hydrogen lines.
Cord. G.C. 7192	5 59·4	− 6 42	5·8	1888 Feb. 15	F line bright.
,, ,, 17717	12 56·3	−70 56	6·6	1890 May 14	F line bright.
,, ,, 18770	13 43·4	−27 44	7·0	,, May 15	III. Type. Bright hydrogen lines.
,, ,, 18947	13 51·6	−55 51	8·0	,, May 25	IV. Type.
,, ,, 20554	15 48	−69 42	6·2	,, May 26	IV. Type.

It is remarked that "the stars D.M. + 33°·470 and Cord. G.C. 18770 in the above list have a spectrum in which the lines due to hydrogen are bright, as in that of *o* Ceti and other variables of long period. They were therefore suspected of variability." An examination of the Harvard College Observatory photographic charts and spectra indicates that the former star varies between 7·1 mag. and 9 2 mag., and the latter between 7·0 mag. and 10·4 mag. Three observations of Cord. G.C. 18770 by Stone gave a magnitude 6. It is interesting to note that the Rev. T. E. Espin announced the probable variability of the star D.M. + 33°·470 in *Walsingham Observatory Circular*, No. 27 (NATURE, November 13, p. 45).

A photograph of the spectrum of T Ceti shows that it belongs to the third type. A photograph of the spectrum of the variable of the Algol type, viz. S Antilæ (R.A. 9h. 27·9m., Decl. −28° 12′), discovered by Paul in 1889, shows the hydrogen lines at λ 410 and λ 434 (*h* and G) narrow, while the lines at λ 394 and λ 397 are very broad. This would place it in "an intermediate class between stars of the first and second types."

THE ROTATION OF JUPITER.—A report in the *Revue Générale des Sciences*, of the meeting of the St. Petersburg Academy of Sciences held on November 18, contains an account of a paper by M. Biolopolski, on the rotation of the planet Jupiter. Cassini appears to have been the first to point to the analogy between the rotation of Jupiter and the sun, by demonstrating that the velocity at the equator is greater than on the rest of the surface of these two bodies. It is known that on the sun the angular velocities are functions of the heliographic latitudes. By utilizing observations and drawings made by Cassini, Herschel, Schröter, and many other observers, M. Biolopolski has been able to determine more than a hundred angular velocities at various "Jovigraphic" latitudes. Among these velocities two predominate, one of 9 hours 51 minutes, and another of 9 hours 55·5 minutes (approximately). The first is found almost exclusively in the zone between 0° and 5°, in both hemispheres; the second is obtained from the remainder of the surface, except between 5° and 10°, both N. and S., where the two velocities appear to occur with equal frequency. These conclusions are confirmed by Mr. Keeler's drawings of Jupiter, made at the Lick Observatory during this year.

EDDIE'S COMET (?).—A telegram from Cape Town Observatory to the editor of the *Astronomische Nachrichten*, with regard to the supposed remarkable comet seen by Mr. Eddie on October 27 at Grahamstown, reads: "It has been cloudy here, October 27; has not been seen by anyone else."

NAMES FOR ASTEROIDS.—The following names have been given to recently-discovered asteroids:—

(283) Emma.
(284) Amelia.
(285) Regina.
(289) Nenetta.
(293) Brasilia.
(294) Felicia.

PERIOD OF χ CYGNI.—Mr. Chandler represents the inequalities in the period of the variable χ Cygni by the formula

$$406{\cdot}02 \text{ E days} + 0{\cdot}0075 \text{ E}^2 \text{ days} + 25^\circ{\cdot}0 \sin (5^\circ \text{ E} + 272^\circ),$$

where E is the normal epoch of a maximum. This formula, containing quadratic and periodic terms, gives the epochs of maxima much nearer than those derived from Schönfeld's uniform period of 406·5 days.

BIOLOGICAL NOTES.

ILLUSION OF WOODPECKERS AND BEARS.—Mr. J. D. Pasteur, Inspector of the Post and Telegraphic Service at Java, communicated to Dr. F. A. Jentink, in July last, the following very curious and interesting facts about woodpeckers, who, under the illusion that the buzzing sound so apparent on applying the ear to telegraph poles is caused by the vigorous efforts of gnawing or boring insects, make large holes in the timber, on a hopeless chase after such. He incloses a piece of a telegraph pole made of teakwood, with two woodpeckers (*Picus analis*), from the Kediri Residency, Java. The wood, which is of iron hardness, is perforated with rather large holes near the place where the insulators had been attached. Although Inspector Pasteur passes thousands of telegraph poles under view each year, only in a very few